1: Freeman E-5 (1949-1951) 1955 OC6 Iban OC6

indeed, there was a marked tendency in this direction. At Gansurai, a Dayak long-house on the banks of the Layar River, for example, 6 of the 19 *bilek* families did not grow any *padi* during the 1950-51 season, and were relying entirely on imported rice which they were able to purchase with money obtained from the sale of rubber. This was no great difficulty. One of the *bilek* families of Gansurai, employed 11 Malays on a share-cropping basis, and in April, 1951, with rubber at $1·15 per kati, the monthly income of this family was about $1,400.

254. At Rumah Nyala, the rubber boom also made itself felt, but not to the extent of any household appreciably reducing the size of its farm. In many cases, however, less than normal attention was paid to farming so that more time would be available for tapping rubber. Unfortunately, I was not able to remain at Rumah Nyala to guage the possible effects of this tendency upon the yields obtained at the 1951 harvest. The reasons why the rubber boom had not, by early 1951, seriously affected *padi* farming in the Baleh region are numerous. First, many families did not possess sufficient rubber to furnish their minimum needs. Further, the Iban did not analyze the changed situation in purely economic terms; their reaction was to continue with the cultivation of *padi*, and to reap what profit they could from rubber in the time left to them. (Towards the end of 1950, for example, many young men elected to stay at home and tap rubber rather than go on a *bejalai*). For this, they had a number of sound arguments. One element of great importance is the fact that to Iban palates their own hill rice is immensely preferable to the polished rice which is all they can purchase from the local bazaars. Anyone who has eaten hand-pounded, hill rice will appreciate this point, for hill rice of good quality has a delicious nutty flavour, which makes ordinary white rice seem insipid and savourless.[1] Again, from past experience, the Iban knew how risky it is to rely on supplies of imported rice; and here, certainly, they were on firm ground. Finally, as we have seen, the protracted work which accompanies the cultivation of rice is principally the duty of women; in 1950, there was a marked tendency for the general management of the farm to be handed over to the women of a family, while the men lived at the long-house and devoted their time to tapping rubber. In February, 1951, when I left Rumah Nyala, it had already been decided that during the coming season all *bilek* families would farm secondary jungle in the environs of the main long-house, and that after the harvest had been reaped (i.e. in 1952) all this land would be planted with rubber. Similar extensions of rubber plantations were taking place throughout the entire Baleh region.

255. As this brief survey shows, rubber production has become an extremely important element in Iban economy. At present it is still subsidiary to *padi* cultivation, and acts as a valuable safeguard against rice shortages which are liable to occur in unfavourable years. As long as rubber retains this subsidiary position it has a most useful fuction to serve, but there is always a danger that it may tend to surplant *padi* farming as a main activity, and this—in view of the world rice shortage—is a contingency against which active measures must be taken.

[1]Cf. Mr. Duncan J. de Soyza's statement: ". . . . some hill paddy varieties have outstanding qualities. The cooked rice of the scented varieties has a very agreeable odour and is pleasing to the palate. In eating qualities it is superior to wet rice." (Ref. Tropical Agriculturist, Vol. 100, pp. 211-218). Mr. de Soyza also points out that "from a nutritive point of view hill paddy rice is superior to wet land rice, being richer in protein compounds." (Cf. the findings of Prof. O. Kellner).

sis or septal patency. In no case was the exercise tolerance test impaired. It is quite possible that some apical systolic murmurs denoted early mitral valve lisions that might progress to stenosis. The absence of indisputable rheumatic carditis was very noteworthy in view of the fact that otitis media was moderately common and as both are closely related to streptococcal throat infections.

I am indebted to Dr. T. Wilson of the Institute for Medical Research, Kuala Lumpur and Capt. J. Bolton R.A.M.C. who carried out blood survey on the Sarawak Rangers when they reached Malaya for the following figures giving the incidence of filariasis.

	Number examined.	*Cases of filariasis.*	%
Second Division			
Simanggang	27	9	33
Lubok Antu	80	0	0
Engkilili	10	2	20
Third Division			
Kapit	148	8	5.4
Song	59	0	0
Kanowit	48	5	10

I found two cases of early elephantiasis of the scrotum but was unable to confirm them microscopically.

Quite as interesting as the diseases found were the diseases not found that might have been expected. No leprosy was encountered. Only two men appeared slightly anaemic despite the amount of hookworm infestation that is prevalent in the East. Physical deformities like kyphosis, scoliosis and limb shortening due to fractures were striking by their absence. Only three cases had muscle wasting that might have been attributable to poliomyelitis or encephalitis. No hydroceles or varicoceles were met with, yet in the U.K. about one in twenty males have varicoceles. Only one man had an inguinal hernia—a common condition among English recruits. Veneral disease is hard to diagnose without laboratory aid; one primary chancre was seen but no other manifestation of syphilis. Gonorrhoea (as diagnosed by visible deposit in the urine) was absent. But V.D. is notoriously easy to conceal. None of the numerous vitamin deficiency diseases were seen.

Height and Weight. The average heights of recruits at the various towns were as follows:—

		Number
Kanowit	63.9 inches	53
Simanggang	63.4 "	33
Song	63.3 "	93
Kapit	63.4 "	205
Engkilili	63.1 "	15

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Living as they do near the bazaar, contact with it has necessarily influenced the way of life of these people considerably. All the men have short hair and many of the women have waves. They wear a Malay type of dress or European clothes.

The majority of the people in the house profess Christianity. The majority of children in the house have for many years attended the mission school in Simnaggang. The majority of people in the house are able to read and write. Several members have attained a fairly high standard of education and are employed in Government Service.

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To summarize the background briefly: Rumah Bujak is an average longhouse in the lower Batang Lupar as regards position, standard of construction and state of cleanliness. The people have attained a high level of prosperity on Sea Dayak standards. As a result their standard of living is way ahead of longhouses in many other areas of the Second Division.

DIETARY SURVEY

Method

As a sufficient proportion of the population of the house were able to write, each room was asked to keep a diary of everything they ate and drank at every meal for one week, starting on the 23rd March, 1958. At the end of this period the results were collected and the weight likely to be consumed by an average adult male was assigned to each food commodity. The estimate for rice was the most accurate since it is customary at this longhouse to measure the rice used for each meal in cigarette tins full. A portion of rice cooked for each meal is wasted but as this must be very variable no allowance was made for it; so that as rice forms usually a high proportion of the daily food intake (see below) the results will tend to err on the high side. An attempt was made to estimate the weight of other food commodities consumed without bias, so that errors would be mutually exclusive and not cumulative.

Having estimated the weight of each food commodity, its protein, fat, carbohydrate and calorie content was calculated from

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one food table (F.A.O. Nutritional Studies No. 3) and its iron content from another (McChance and Widdowson, 1946). An exception was the iron content of rice which was give the value reported by Rosedale for hulled Malayan rice (Rosedale, 1939). The food values for peculiar local foods were calculated from the nearest equivalent in the tables. Where this was not possible (e.g. for certain fruits and vegetables) the values under unspecified food (tropical areas) and unspecified fresh vegetables were used. 128 146

The daily intake of protein, fat, carbohydrate, iron and calories was then estimated for each of the seven days for an average adult male of each door and from this the average daily intake of protein, fat, carbohydrate, iron and calories and the range for each value was estimated.

Finally the percentage protein, fat, carbohydrate, iron and calorie intake obtained from rice was calculated.

Results

The results obtained from 25 rooms were accepted for analysis. Those obtained from 2 rooms were rejected because they were thought to be incomplete. Three rooms did not take part in the investigation because they were not in the longhouse at the time when it was carried out. Table I sets out one of the poorest diets analysed. Table II sets out one of the best diets analysed. Table III sets out the most monotonous diet in the series. The average, maximum and minimum daily intake of proteins, fats, carbohydrates, iron and calories for an adult male in each room is set out in Table IV. Table V shows the proportion of the daily food intake obtained from rice.

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TABLE I

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AN EXAMPLE OF A POOR DIET CONSUMED BY AN AVERAGE ADULT MALE OF DOOR 1. (SEE TABLE IV).

Day	Breakfast		Lunch		Supper	
	Commodity	*Amount*	*Commodity*	*Amount*	*Commodity*	*Amount*
1.	Rice Salt fish	8 oz. 2 oz.	Rice Trongs ("egg fruit")	8 oz. 2 oz.	Rice Pumpkin leaves	8 oz. 2 oz.
2.	Rice Tapioca leaves	8 oz. 2 oz.	Rice Salted Shrimps	8 oz. ½ oz.	Rice Tapioca leaves	8 oz. 2 oz.
3.	Rice Pumpkin	8 oz. 2 oz.	Rice Pumpkin	8 oz. 2 oz.	Rice Pumpkin	8 oz. 2 oz.
4.	Rice Daun Changkok (green leaf vegetable)	8 oz. 2 oz.	Rice Daun Changkok	8 oz. 2 oz.	Rice Ikan Betok (fresh water fish)	8 oz. 4 oz.
5.	Rice Cucumber	8 oz. 2 oz.	Rice Cucumber	8 oz. 2 oz.	Rice Trongs	8 oz. 2 oz.
6.	Rice Ikan Pusu (variety of salt fish)	8 oz. 1 oz.	Rice Daun Changkok	8 oz. 2 oz.	Rice Daun Changkok	8 oz. 2 oz.
7.	Rice Prawn paste	8 oz. ½ oz.	Rice Pumpkin	8 oz. 2 oz.	Rice Pumpkin	8 oz. 2 oz.

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TABLE II

AN EXAMPLE OF GOOD DIET CONSUMED BY AN AVERAGE ADULT MALE OF DOOR 5. (SEE TABLE IV).

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Day	Breakfast		Lunch		Supper	
	Commodity	*Amount*	*Commodity*	*Amount*	*Commodity*	*Amount*
1.	Rice	8 oz.	Rice	8 oz.	Rice	8 oz.
	Fresh fish	2 oz.	Fresh fish	2 oz.	Cornbeef	2 oz.
	Paku kubok (wild vegetable)	2 oz.	Buah Rotak (long beans)	2 oz.	Tapioca leaves	2 oz.
	Salt fish	2 oz.			Ikan Sepat (sea fish),	2 oz.
2.	Rice	8 oz.	Rice	8 oz.	Rice	8 oz.
	Cornbeef	2 oz.	Yams	3 oz.	Sardines	½ oz.
	Daun Changkok (green leaf vegetable)	2 oz.	Salt fish	2 oz.	Pork	3 oz.
	Salt fish	2 oz.			Tapioca leaves	2 oz.
					Sting ray	2 oz.
3.	Rice	8 oz.	Rice	8 oz.	Rice	8 oz.
	Mushrooms	2 oz.	Cucumber	2 oz.	Daun	
	Trong	2 oz.	Sardines	½ oz.	Bayam (green leaf	
	Ikan betok (fresh		Snails	1 oz.	vegetable)	2 oz.
	water fish)	2 oz.	Ikan puan	1 oz.	Salt fish	2 oz.
	Prawn	3 oz.			Sardines	½ oz.
					Pork	3 oz.
4.	Rice	8 oz.	Rice	8 oz.	Rice	8 oz.
	Tapioca leaves	2 oz.	Cabbage	2 oz.	Cabbage	2 oz.
	Cornbeef	2 oz.	Fowl	5 oz.	Curried fish	2 oz.
	Salt fish	2 oz.			Sting ray	2 oz.
5.	Rice	8 oz.	Rice	8 oz.	Rice	8 oz.
	Salt fish	2 oz.	Cucumber	2 oz.	Cabbage	2 oz.
	Trong	2 oz.	Sardines	½ oz.	Pork	3 oz.
					Prawns	3 oz.
6.	Rice	8 oz.	Rice	8 oz.	Rice	8 oz.
	Trong	2 oz.	Trong	2 oz.	Pumpkin	2 oz.
	Pork	3 oz.	Pork	2 oz.	Sting ray	2 oz.
			Cabbage	2 oz.	Tapioca leaves	2 oz.
7.	Rice	8 oz.	Rice	8 oz.	Rice	8 oz.
	Buah gerok	2 oz.	Pork	3 oz.	Mushrooms	2 oz.
	Prawns	3 oz.	Cucumber	2 oz.	Daun Changkok	2 oz.
	Ikan belok	2 oz.	Sardines	½ oz.	Prawns	3 oz.

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TABLE III

THE MOST MONOTONOUS DIET IN THE SERIES.

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Day	Breakfast		Lunch		Supper	
	Commodity	*Amount*	*Commodity*	*Amount*	*Commodity*	*Amount*
1.	Rice Salt fish Daun Changkok	8 oz. 2 oz. 2 oz.	Rice Fresh fish Daun Changkok	8 oz. 2 oz. 2 oz.	Rice Fresh fish Daun Changkok	8 oz. 2 oz. 2 oz.
2.	Rice Salt fish Daun Changkok	8 oz. 2 oz. 2 oz.	Rice Salt fish Daun Changkok	8 oz. 2 oz. 2 oz.	Rice Fresh fish Daun Changkok	8 oz. 2 oz. 2 oz.
3.	Rice Fresh fish Daun Changkok	8 oz. 2 oz. 2 oz.	Rice Salt fish Daun Changkok	8 oz. 2 oz. 2 oz.	Rice Salt fish Daun Changkok	8 oz. 2 oz. 2 oz.
4.	Rice Salt fish Daun Changkok	8 oz. 2 oz. 2 oz.	Rice Salt fish Daun Changkok	8 oz. 2 oz. 2 oz.	Rice Salt fish Daun Changkok	8 oz. 2 oz. 2 oz.
5.	Rice Salt fish Daun Changkok	8 oz. 2 oz. 2 oz.	Rice Salt fish Daun Changkok	8 oz. 2 oz. 2 oz.	Rice Salt fish Daun Changkok	8 oz. 2 oz. 2 oz.
6.	Rice Salt fish Daun Changkok	8 oz. 2 oz. 2 oz.	Rice Salt fish Daun Changkok	8 oz. 2 oz. 2 oz.	Rice Salt fish Daun Changkok	8 oz. 2 oz. 2 oz.
7.	Rice Daun Changkok	8 oz. 2 oz.	Rice Salt fish Daun Changkok	8 oz. 2 oz. 2 oz.	Rice Salt fish Daun Changkok	8 oz. 2 oz. 2 oz.

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TABLE IV

ESTIMATED DAILY INTAKE OF PROTEIN, FAT, CARBOHYDRATE, IRON AND CALORIES FOR AN AVERAGE ADULT MALE AS CALCULATED FROM THE DIARY OF ONE WEEK'S FOOD CONSUMPTION.

Door	Protein in grammes/day			Fat in grammes/day			Carbohydrate in grammes/day			Iron in m.grammes/day			Calories per day			
	Min.	Max.	Average	Min.	Max.	Average	Min.	Max.	Average	Min.	Max.	Average	Min.	Max.	Average	
1.	50	67	57	8	12	9	551	558	553	22	23	22	2663	2784	2715	
2.	62	148	88	12	64	32	534	548	538	23	28	26	2632	3389	2855	
3.	74	107	90	11	110	39	533	545	538	23	28	26	2630	3575	2943	
4.	61	131	94	16	107	49	533	546	481	18	30	26	1825	3587	2807	— Two breakfast missed.
5.	93	128	107	22	112	58	537	556	544	27	35	25	2802	3677	3168	
6.	78	93	87	10	73	47	556	544	547	23	27	30	2658	3251	3019	
8.	66	106	87	101	104	102	528	473	480	23	30	26	3110	3456	3332	— Very high pork consumption.
9.	58	105	85	9	110	32	541	559	554	26	30	26	2685	3349	2981	
10.	70	102	84	15	103	66	539	575	560	26	30	28	2895	3756	3379	
11.	55	76	64	8	31	11	479	501	487	20	23	27	2399	2681	2498	
12.	70	89	81	9	57	19	535	556	540	24	29	21	2673	3230	2776	
13.	57	94	78	10	61	19	533	540	536	24	27	26	2543	3062	2769	
14.	62	99	78	13	55	22	537	556	545	25	28	26	2633	2960	2755	
16.	75	98	85	10	59	19	533	545	539	24	26	26	2624	3081	2823	
17.	91	97	95	12	16	13	537	537	537	26	27	25	2702	2706	2705	— The most monotonous diet in the series.
19.	63	98	80	11	105	40	533	542	538	23	28	27	2567	3505	2911	
20.	52	89	72	8	61	18	541	636	566	25	27	25	2577	3120	2768	
21.	52	71	63	8	17	12	531	537	535	23	25	26	2477	2675	2588	
22.	62	95	83	11	195	56	531	537	532	24	30	24	2551	4273	3024	
23.	60	108	73	11	32	16	531	557	539	23	30	26	2540	3015	2654	
24.	53	104	82	8	108	19	535	542	537	25	30	25	2496	3541	2795	
25.	52	81	65	8	14	10	535	561	543	24	26	27	2477	2653	2570	
28.	71	90	78	12	105	40	535	542	538	25	30	26	2626	3090	2886	
29.	52	81	66	8	12	10	534	558	539	24	26	25	2477	2714	2571	
31.	52	75	61	8	104	36	531	539	537	23	27	25	2477	3433	2775	

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TABLE V

PROPORTION OF DAILY FOOD INTAKE OBTAINED FROM RICE.

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	Percentage of daily intake obtained from Rice		
	Maximum	*Minimum*	*Average*
Protein	96	46	75
Fat	93	4	24
Carbohydrate	100	83	97
Iron	99	62	84
Calories	99	57	85

Comments on this Diet

Samson Wright (Wright, 1952) states that an average normal British diet contains daily 100 grammes of protein (410 calories), 100 grammes of fat (930 calories) and 400 grammes of carbohydrate (1,640 calories) giving a daily calorie intake of 3,000 calories. It will be seen from Table IV that few diets in Rumah Bujak approached this satisfactory standard.

Small groups of people have been kept in positive nitrogen balance for limited periods on less than 50 grammes of protein a day. The proteins in these experiments were, however, specially selected and of high biological value. On an ordinary mixed diet 80 grammes of protein daily would probably be satisfactory (Wright, 1952). This would apply particularly in the case of the people of Rumah Bujak, where a large part of the protein consumed is of vegetable origin.

Taking into account the crude nature of the analysis of the results in the present investigation, the diets or 5 doors (20 per cent) fall far short of this standard i.e. an average protein intake of less than 70 grammes daily.

Samson Wright considers that the fat content of the diet should be at least 75 grammes daily (Wright, 1952). Only one diet at Rumah Bujak exceeded this requirement and only one

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other even approached it. The other diets gave a very low daily fat intake. 146

Fat is required to enhance the calorie value of a diet without unduly increasing its bulk.

The daily carbohydrate intake exceeded in every case the average daily British intake of carbohydrate by amounts ranging from 80 grammes to 166 grammes. This probably represents an attempt to acquire calories which ought to be acquired in the form of fat. Anyone who has visited longhouses and watched the Sea Dayak at table must have marvelled at the huge platefuls of rice which are consumed in the process of assimilating this large quantity of carbohydrate.

To attain a calorie intake of 3,000 calories the food consumed must have a caloric value of 3,300 calories—as 10 per cent of the calories are lost in the process of digestion.

Only one diet at Rumah Bujak attained this level. Again taking into account the crude nature of the analysis of the diets and a daily calorie intake of less than 2,800 calories being considered unsatisfactory on British standards, then 11 (44 per cent) of the diets would be in this category.

The people of Rumah Bujak are on the whole shorter and lighter than the average British subject so that part of the deficit could be accounted for by a lower basal energy requirement, say 400 calories less as a generous estimate. This, however, leaves a further deficit in the 11 diets which is probably real and undesirable. The cause of this suboptimal calorie intake is probably the low fat content of the diet. The attempt to acquire calories in the form of carbohydrate is limited by the bulk of the food and is not completely successful. It is interesting that the only diet which exceeded the average daily British calorie intake also slightly exceeded the average daily British fat intake (Door 5, Table IV). [142]

A normal woman and a growing child require 15 mgs. of iron daily. Men require about a third this amount (Whiby and Britton, 1957). It is therefore evident that the average daily iron intake provided by all the diets in the present study is

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eminently satisfactory. This is due to the important place of rough milled rice in the daily diet, rice being very rich in iron.

To sum up these data, a significant proportion of the population of Rumah Bujak have a suboptimal daily protein intake. A significant proportion of the population have a suboptimal calorie intake due to the low fat content of their diet, they being unable to substitute sufficient carbohydrate for the fat deficit because of the large bulk that would be required.

These observations become very significant when it is remembered, as stated earlier in this paper, that the people of Rumah Bujak are relatively well-to-do and it is reasonable to expect that the diets analysed here are *the best obtainable in the Second Division.*

Acknowledgments

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2. Adoption

A second way by which membership in the bilik-family is effected is through adoption (iru or ambu'; v.f., ngiru, ngambu'). Adoption is a fairly common practice among the Iban for four main reasons. First, although there is a high rate of marriage among the Iban, there also is a high rate of childlessness. Being without children gives rise to shame, and is interpreted as a curse. Many Iban women are childless due to dietary problems. Some miscarry (kelebuan) because of improper ante-natal care and excessively heavy work. Others deliver successfully, but inadequate facilities in the longhouse, together with heavy-handed procedures in achieving the passage of the baby, result in the death of the infant and, sometimes, the mother as well.[10] Post-partum practices account for a high infant mortality rate.[11] These factors and others contribute to the high incidence of childlessness among the Iban.

A second reason for the practice of adoption has been the traditional system of social security. Oriented as they have been to a non-cash economy, the Ibans have recognized the dependence of the old upon

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[10] During labor, women press upon a board placed across the abdomen of the woman delivering to help passage of the baby. In one case reported by a hospital surgeon, difficulty was encountered and a woman seized the arm of the infant, wrenching it from the socket, resulting in the death of both baby and mother.

[11] Tetanus, caused by cutting the umbilical cord with a bamboo sliver and then rubbing ash from the hearth into the naval, has been a major cause of early infant deaths.